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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/925,740

08/10/2001

Takuya Yamamoto

108384-00030

6658

6449

7590

05/12/2006

ROTHWELL, FIGG, ERNST & MANBECK, P.C.

1425 K STREET, N.W.

SUITE 800

WASHINGTON, DC 20005

EXAMINER

NGUYEN, KHIEM D

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 05/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/925,740

Applicant(s)

YAMAMOTO ET AL.

Examiner

Khiem D. Nguyen

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2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Applicants' Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action mailed on December 28th, 2005 in Paper No. 122105 is persuasive and, therefore, the finality of that action is withdrawn. A new rejection is made as set forth in this Office Action. Claims (5-22) are pending in the application.

Priority

2. Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d) prior to declaration of an interference, a translation of the foreign application should be submitted under 37 CFR 1.55 in reply to this action.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 5-22 rejected under 35 U.S.C. 102(e) as being anticipated by Taenaka et al. (U.S. Patent 6,649,274).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the

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reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

In re claim 5, Taenaka discloses a process for producing a copper clad laminate comprising, providing an insulation layer 8 constituent material having a first and a second side (top side and bottom side), coating the first side (top side) with a first copper foil 5 of a first thickness ($3\mu\text{m}$, col. 10, line 50), coating the second side (bottom side) with a second copper foil 3 of a second thickness ($18\mu\text{m}$, col. 10, line 46) to produce an insulation layer constituent material, first copper foil 5 and second copper foil 3 assembly, wherein the thickness of the second foil 3 ($18\mu\text{m}$) is greater than the thickness of the first foil 5 ($3\mu\text{m}$) (col. 10, line 41 to col. 11, line 13), hot pressing the assembly to produce the laminate, wherein the first copper foil 5 (the electrodeposited copper foil, HTE) is not recrystallized during the hot pressing, and wherein the second copper foil 3 (S-THE) is recrystallized during the hot pressing (col. 5, lines 11-21 and FIG. 1).

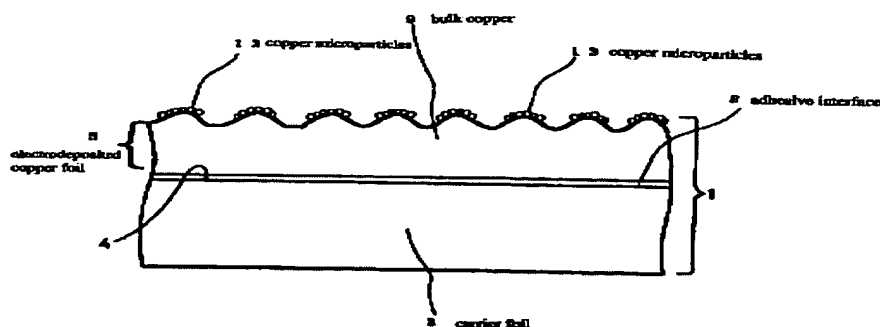


FIG. 1

In re claim 6, as applied to claim 5 above, Taenaka discloses all claimed limitations including the limitation wherein the thickness of the second foil 3 ($18\mu\text{m}$, col.

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10, lines 46) is four times or less than the thickness of the first foil 5 (3 μ m, col. 10, line 50).

In re claim 7, as applied to claim 5 above, Taenaka discloses all claimed limitations including the limitation wherein the insulation layer 8 constituent material is a resin (col. 10, lines 55-65).

In re claim 8, as applied to claim 5 above, Taenaka discloses all claimed limitations including the limitation wherein the second copper foil 3 contracts about 0.05% under pressing conditions of 180°C and 1 hr (col. 11, lines 17-28).

In re claim 9, as applied to claim 5 above, Taenaka discloses all claimed limitations including the limitation wherein the second copper foil 3 is a S-THE foil (col. 10, lines 41-51).

In re claim 10, as applied to claim 5 above, Taenaka discloses all claimed limitations including the limitation thermally treated under the conditions of 180°C and 1 hour, heat for which corresponds to that for hot pressing, the S-THE foil 3 inherently has a low Young's modulus of around 40 to 50 Gpa as compared with around 55 to 60 Gpa of the common copper foil 5 (col. 11, lines 17-28). Thus, if one chose the Young's modulus of the first copper layer 5 to be 55 Gpa and the Young's modulus of the second copper S-THE foil 3 to be 50 Gpa, (50 Gpa x 1.1 = 55 Gpa), from this result, one can concluded that the Young's modulus of the first copper foil 5 is 1.1 times more than the Young's modulus of the second foil 3.

In re claim 11, Taenaka discloses a process for producing a copper clad laminate comprising, providing an insulation layer 8 constituent material having a first (top side)

and a second side (bottom side), coating the first side (top side) with a first copper foil 5 of a first thickness (3 μm , col. 10, line 50), coating the second side (bottom side) with a second copper foil 5 of a second thickness (18 μm , col. 10, line 46) to produce an insulation layer constituent material 8, first copper foil 3 and second copper 5 foil assembly, wherein the thickness of the second foil 5 (18 μm , col. 10, line 46) is greater than the thickness of the first foil 3 (3 μm , col. 10, line 50) (col. 10, line 41 to col. 11, line 13), hot pressing the assembly to produce the laminate, wherein the first 5 and second 3 copper foils are recrystallized during the hot pressing, wherein the second copper foil 3 is more recrystallized than the first 5 copper foil (col. 10, line 52 to col. 11, line 13 and FIG. 1).

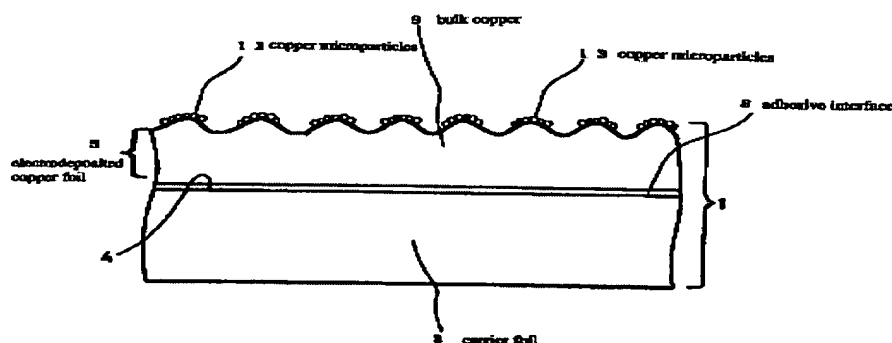


FIG. 1

In re claim 12, as applied to claim 11 above, Taenaka discloses all claimed limitations including the limitation wherein the thickness of the second foil 3 (18 μm , col. 10, lines 46) is four times or less than the thickness of the first foil 5 (3 μm , col. 10, line 50).

In re claim 13, as applied to claim 11 above, Taenaka discloses all claimed limitations including the limitation wherein the insulation layer 8 constituent material is a resin (col. 10, lines 55-65).

In re claim 14, as applied to claim 11 above, Taenaka discloses all claimed limitations including the limitation wherein the second copper foil 3 contracts about 0.05% under pressing conditions of 180°C and 1 hr (col. 11, lines 17-28).

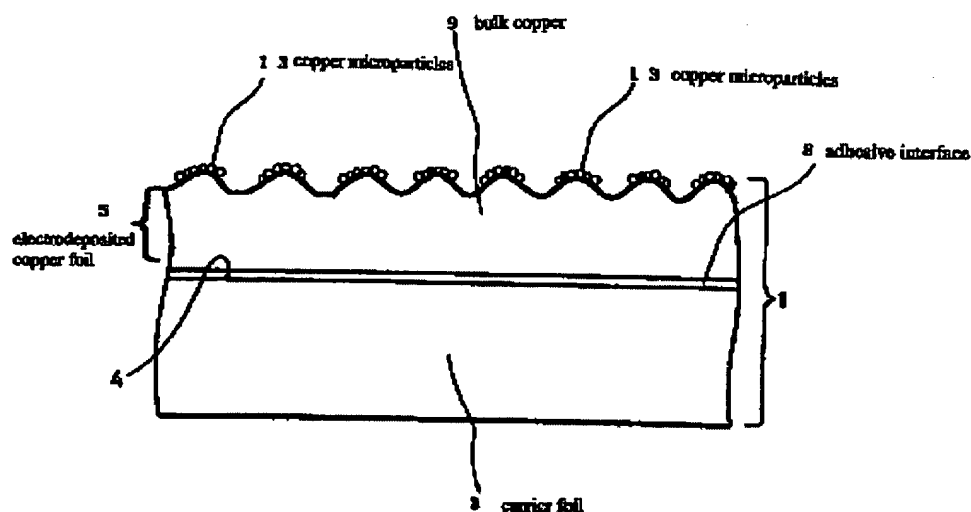
In re claim 15, as applied to claim 11 above, Taenaka discloses all claimed limitations including the limitation wherein the second copper foil 3 is a S-THE foil (col. 10, lines 41-51).

In re claim 16, as applied to claim 11 above, Taenaka discloses all claimed limitations including the limitation thermally treated under the conditions of 180°C and 1 hour, heat for which corresponds to that for hot pressing, the S-THE foil 3 inherently has a low Young's modulus of around 40 to 50 Gpa as compared with around 55 to 60 Gpa of the common copper foil 5 (col. 11, lines 17-28). Thus, if one chose the Young's modulus of the first copper layer 5 to be 55 Gpa and the Young's modulus of the second copper S-THE foil 3 to be 50 Gpa, ($50 \text{ Gpa} \times 1.1 = 55 \text{ Gpa}$), from this result, one can concluded that the Young's modulus of the first copper foil 5 is 1.1 times more than the Young's modulus of the second foil 3.

In re claim 17, Taenaka discloses a process for producing a copper clad laminate, providing an insulation layer constituent material 8 having a first (top surface) and a second side (bottom surface), coating the first side (top surface) with a first copper foil 3 of a first thickness (3 μm , col. 10, line 50), coating the second side (bottom surface) with

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a second copper foil 5 of a second thickness (18 μm , col. 10, line 46) to produce an insulation layer constituent material 8, first copper foil 5 and second copper foil 3 assembly, wherein the thickness of the second foil 3 (18 μm) is greater than the thickness of the first foil 5 (3 μm) (col. 10, line 41 to col. 11, line 13), hot pressing the assembly to produce the laminate, wherein the first 5 and second 3 copper foils contract during hot pressing, wherein the second copper 3 foil inherently contracts to a larger extent than the first copper foil 5 during hot pressing (col. 5, lines 11-21 and FIG. 1).



In re claim 18, as applied to claim 17 above, Taenaka discloses all claimed limitations including the limitation wherein the thickness of the second foil 3 (18 μm , col. 10, lines 46) is four times or less than the thickness of the first foil 5 (3 μm , col. 10, line 50).

FIG. 1

In re claim 19, as applied to claim 17 above, Taenaka discloses all claimed limitations including the limitation wherein the insulation layer 8 constituent material is a resin (col. 10, lines 55-65).

In re claim 20, as applied to claim 17 above, Taenaka discloses all claimed limitations including the limitation wherein the second copper foil 3 contracts about 0.05% under pressing conditions of 180°C and 1 hr (col. 11, lines 17-28).

In re claim 21, as applied to claim 17 above, Taenaka discloses all claimed limitations including the limitation wherein the second copper foil 3 is a S-THE foil (col. 10, lines 41-51).

In re claim 22, as applied to claim 17 above, Taenaka discloses all claimed limitations including the limitation thermally treated under the conditions of 180°C and 1 hour, heat for which corresponds to that for hot pressing, the S-THE foil 3 inherently has a low Young's modulus of around 40 to 50 Gpa as compared with around 55 to 60 Gpa of the common copper foil 5 (col. 11, lines 17-28). Thus, if one chose the Young's modulus of the first copper layer 5 to be 55 Gpa and the Young's modulus of the second copper S-THE foil 3 to be 50 Gpa, ($50 \text{ Gpa} \times 1.1 = 55 \text{ Gpa}$), from this result, one can concluded that the Young's modulus of the first copper foil 5 is 1.1 times more than the Young's modulus of the second foil 3.

Response to Applicants' Amendment and Arguments

5. Applicant's arguments with respect to claims 5-22 received on April 28th, 2006 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D. Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:30 AM - 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K.N.
May 9, 2006


BROOK KEBEDE
PRIMARY EXAMINER